

invasion by secondary or concurrent bacteria which thus induce a mixed infection. The bacteria which under the influence of the virus of typhus fever thus invade the body of the guinea-pig are of several kinds, and vary not only among themselves, but also with the day of the fever on which the examination is made. Thus, on the first day of the fever, Plotz's bacilli were recovered twice and anaërobic streptococci, *proteus* bacilli, aërobic diphtheroids, Gaertner type bacilli, and *Staphylococcus aureus*, each once. On the second day Plotz's bacilli were found four times, anaërobic streptococci three times, Gaertner type bacilli, aërobic diphtheroids, *Bacillus welchii*, aërobic Gram-positive diplobacilli, and *Staphylococcus aureus*, each once. On the third day Plotz's bacilli were recovered once, as were anaërobic streptococci and Gaertner type bacilli. On the fourth day, *Staphylococcus aureus* was found twice and Plotz's bacilli and *Bacillus proteus* each once. The variation in the kind of bacteria, as well as the lack of predominance of one kind over another during the different stages of the febrile reaction in guinea-pigs, led Olitsky to infer that they occur concurrently with the typhus virus. And since the more unusual of these organisms, the Plotz bacillus, the anaërobic streptococcus, the aërobic diphtheroid, and the diplobacillus are non-pathogenic for guinea-pigs, while the more common bacteria such as the Gaertner type bacillus, Welch's bacillus, the *proteus* bacillus, and the staphylococci induce distinctive effects, and since all the bacteria could be suppressed without their reappearance in guinea-pig passages of the virus containing them, Olitsky believes that they are independent and unrelated to the true virus of typhus fever.

Viability of the Colon-typhoid Group in Carbonated Water and Carbonated Beverages.—KOSER and SKINNER (*Jour. Bact.*, 1922, 1, 111) found that under the conditions of their experiments carbonation exerted a distinctly harmful effect upon the members of the colon-typhoid group and that their period of viability in carbonated water was much shorter than in plain tap water. The destructive effect of the CO₂ was especially marked at room temperature, 19° to 23° C., and less so at 10° C. The authors state that in a "non-acid" beverage, the organisms may persist for a slightly longer period than in carbonated water. In beverages containing 0.004 per cent or greater amounts of citric or lactic acids, the death-rate is very rapid and is apparently due to the effect of these acids, irrespective of the CO₂. *B. Typhosus* and *B. paratyphosus* B are more readily destroyed by CO₂ than is *B. coli*. The spore forms of a common aërobe, *B. mesentericus*, and of a common anaërobe, *C. sporogenes*, were found to be quite resistant to carbonation, surviving one month at room temperature with no apparent diminution in numbers. The authors emphasize the fact that throughout their experiments the water used for carbonation and for preparation of the various beverages was an ordinary city supply of low mineral content. They state that under certain conditions, as for example in carbonated water of high mineral content, it is possible that non-sporeforming organisms may remain alive for longer periods than those reported. This possible influence of certain inorganic salts upon the viability of microorganisms in a carbonated environment has not been studied in the present investigation. The authors state

emphatically that the results obtained in the investigation do not warrant the conclusion that water of a low sanitary quality can be used by the industry in the preparation of carbonated beverages, or that carbonation can be relied upon to destroy evidence of pollution. They state that in many instances, particularly during the summer months, beverages are consumed within a few hours after their preparation and it is obvious that under these conditions pathogenic organisms, if originally present in the water, may survive carbonation and reach the consumer.

Table Utensils as Sources of Tuberculous Infection.—FLOYD and FROTHINGHAM (*Am. Rev. Tuberc.*, 1922, 6, 51) state that the table utensils used by open consumptives may occasionally harbor virulent tubercle bacilli, even after more careful washing than is customary in the average home. The water used to wash such utensils quite frequently contains virulent tubercle bacilli. Floyd and Frothingham conclude from their experiments that it seems evident that the table utensils used by an open consumptive may be not only a menace to the patient himself and to others in his family, but also a general menace when the patient eats in public places. They state that the inference also seems warranted that the dish towel used to wipe these utensils must become contaminated with virulent tubercle bacilli, and the more frequently it is used the more bacilli accumulate, so that if employed for several days without thorough washing, a common practice in many homes, it becomes more and more a depositor of tubercle on the just washed utensils. It would seem, therefore, that the only way to control the danger of spreading tuberculosis by such utensils is to thoroughly sterilize the patients' tableware and the dish towel employed to wipe it after each meal, and the simplest method to accomplish this is to boil them for several minutes.

The Present-day Sources of Common Salt in Relation to Health and Especially to Iodine Scarcity and Goiter.—HAYHURST (*Jour. Am. Med. Ass.*, 1922, 78, 18) states that while iodine may occur in natural deposits along with chlorine, usually in the form of the sodium salt, it is never obtained from such sources commercially because it occurs in too limited quantities. Chili saltpeter is the chief source of iodine. The sea is the great storehouse of iodine where it completes a cycle from inorganic compounds to organic life and return. The salts of sea water are constant in both quality and quantity. Sodium chloride comprises 77.8 per cent, magnesium chloride 10.9 per cent with many other compounds, including sodium iodide, composing the remaining 11.3 per cent. It has an average total salinity of 3.4404 per cent. All of the salts in sea water are unusually soluble in plain water. The great solubility of sodium iodide accounts for its almost complete absence from the land surface and, perhaps, for some of the peculiarities noted in regard to the incidence of goiter. Authorities are agreed that goiter is infrequent in both animals and man along the sea. The same is true also of some fish (salmons) which inhabit both fresh water and sea water, tending to develop goiters in the former, and none in the latter. Apparently sea animals do not have goiter. Practically all salt used in the United States for dietary consumption is obtained from inland sources by the